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ABSTRACT

A study was conducted by the Illinois Community College Board to assess the economic impact of the state's public community colleges upon their local service districts. As part of the study, financial information concerning local businesses, local governments, faculty, staff, and students at six representative institutions were examined to determine: (1) the volume of college-related local business: (2) the value of business real property and business inventory committed to college-related business: (3) the expansion of the credit base at local banks resulting from college-related deposits: (4) the amount of college-related revenues received by local governments as measured, in part, by the tax contributions of college personnel: (5) the cost of public school and other municipal services allocable to college-related influences: (6) the number of local jobs attributable to the presence of the college: and (7) the amount of personal income generated for local individuals through college-related employment. The study report describes the economic model developed by Caffrey and Isaacs from which the seven variables were chosen, examines the methods and formulas used in computing dollar figures, and analyzes findings for each of the colleges. (JP)

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Illinois Community College Board

A STUDY OF THE ECONOMIC IMPACT OF SIX COMMUNITY COLLEGES IN ILLINOIS

MARCH 1980

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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JC 800 418

A Study of the Economic Impact of Six

Community Colleges Upon Their Districts

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PREFACE

The primary reason for the existence of the community college is to provide educational opportunities to the local adult constituency. Because of this, many and varied programs in vocational, technological, special interests, liberal arts and other programs have been developed. Through these programs there is a considerable educational impact, which expands opportunities for people to pursue the art of making their lives more meaningful.

In addition to serving its primary mission of providing education, a college brings money into the community. In recent years educators and economists have begun to study the economic impact of colleges on their communities. The American Council on Education took the leadership in developing a method to identify and measure this rather obscure but obvious presence of economic effect. Their efforts were headed by two California economists, John Caffrey and Herbert H. Isaacs. They identified twelve areas of economic impact and developed a system to measure these impacts. Although the techniques of securing data are complex, the areas of economic impact are practical and easily understood.

The impact of a community college does not fit all parts of the Caffrey-Isaacs model, because certain financial aspects are different from four-year colleges. This study adapted the Caffrey-Isaacs model to the unique characteristics of community college districts in Illinois by using seven of the twelve models of research which were appropriate for the community colleges. These seven models were:

1. College-Related Local Business Volume
2. Value of Local Business Property Committed to College-Related Business
3. Expansion of Local Banks' Credit Base
4. College-Related Revenues Received by Local Governments
5. Operating Cost of Government-Provided Services Allocable to College-Related Influences
6. Number of Local Jobs Attributable to the Presence of the College
7. Personal Income of Local Individuals from College-Related Jobs and Business Activity.

The need to study economic impact of community colleges in Illinois was identified by the ICCB Research Advisory Council (RAC) through a survey of research needs and priorities of top administrators in community colleges. The highest priority research need of all administrators was impact studies of the community college on both students and the community. As a result of this finding the RAC formed a special subcommittee to develop a procedure for conducting economic impact studies in community colleges. This project was an outgrowth of the work of that subcommittee and the several community colleges that voluntarily chose to participate in this effort.

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HIGHLIGHTS OF THE ECONOMIC IMPACT STUDY

This study was concerned with the economic impact of community colleges in Illinois upon their districts caused by the financial expenditures of the college. The populatin of the study was six selected community colleges representing districts with varying size, number of students, expenditures, populatin characteristics, and locations within the State. The purpose of the study was to determine how great the financial impact was and in what ways the economic impact was manifested in the districts for FY 1978, which extended from July 1, 1977 to June 30, 1978. Consideration was not given to the financial benefits received by persons who improved their earning powers by completing programs or courses at the community colleges.

1. The study is significant in that it is one of the few studies of economic impact done of a community college in Illinois. It is the first time a group of colleges has been researched in the same economic impact study producing comparative data. The study also analyzed various factors which influenced the economic impact. The results indicate there were characteristics of faculty, students, and financial expenditures of the college which influenced the economic impact that a college has on the district.
2. The study revealed there was a large positive economic impact upon each of the six districts, especially upon total business volume created by the college's expenditures. Business volume refers to the dollar value of business transactions in the district created by the expenditures of the college.

The results indicated the range of positive impact in the districts was from $2.49 to $3.62 per dollar spent by the colleges. The total business volume created by the expenditures of the six colleges was $148,779,000 on the six districts. The average impact on business volume was $24,797,000.

3. Another significant economic contribution of the colleges to its community was the expansion of local banks' credit base because of college related deposits. Community college deposits and deposits of its personnel expand the ability of the local banks to make loans for homes, cars, and other large cost items. The largest of the colleges studied showed an average balance in banks, that when combined with deposits of faculty and other staff, increased the credit base of banks more than $14 million. This was a conservative impact figure for the district because it did not included the expansion of the credit base of credit unions and savings and loan institutions where staff and students might have had money. The smallest economic impact upon credit base in the study showed an expansion of the credit base by more than $1.3 million. The average economic impact of the six community colleges on the credit base of local banks was $5,236,000. This is a valuable asset which creates money for more local expenditures.

4. The study of impact upon the local government revealed both positive and negative economic impacts. This was expected because faculty living in a community require services such as education, fire protection, police protection, and upkeep of streets, which impose a negative economic impact upon the community.

5. The community colleges are a source of many jobs in the districts. Not only are there jobs directly related to the colleges, but jobs are created because of the economic impact of the expenditures of the college and those who work at the college. The findings of this study estimated 9,209 jobs were a result of the expenditures of the six community colleges.

6. An extremely interesting aspect of the research was the comparison of economic impact in the various areas with the total expenditures of the college. Some colleges had a greater impact per dollar expenditure than other colleges. The research isolated some of the influencing variables to be: percent of staff living in the district, percent of salaries spent within the district, percent of college funds expended in the district, percent of student body which was full-time, and amount of funds deposited in banks in the district.

7. Based on the assumption that the results of the Local Business Volume Impact of the six colleges were fairly representative of all community colleges in Illinois, a projected impact of business volume on all local community college districts in Illinois would be over $850 million. The impact of all community colleges on the business volume of the State would be considerably higher than $850 million because most of the college-related out-of-district expenditures, which did not contribute to the impact on the local district's business volume, would be spent in Illinois. Hence, the expenditures would contribute to the State's business volume.

TABLE 1

SUMMARY OF ECONOMIC IMPACT DATA

	College A	College B	College C	College D	College E	College F	Total	Average
B-1 College Related Business Volume	$42,428,000	$22,635,000	$29,472,000	$20,067,000	$23,769,000	$10,408,000	$148,779,000	$24,797,000
Ratio of Business Volume to College Expenditures	2.79	2.74	2.49	3.26	3.18	3.62		3.02
Ratio of Business Volume to Local Revenue	4.35	5.63	4.40	4.50	13.43	7.17		6.57
B-2 Value of Local Business Property Committed to College-Related Business	$48,939,000	29,682,000	$42,058,000	$20,166,000	$25,300,000	$ 9,134,000	$175,297,000	$29,213,000
Ratio of Business Property to College Expenditures	3.21	3.60	3.55	3.28	3.39	3.18		3.37
Ratio of Business Property to Local Revenue	5.02	7.38	6.27	4.52	14.30	6.29		7.30
B-3 Expansion of Local Banks' Credit Base	$14,488,000	$ 1,324,000	$ 8,451,000	$ 2,986,000	$ 2,505,000	$ 1,664,000	$ 31,418,000	$ 5,236,000
Ratio of Expanded Banks' Credit Base to College Expenditures	.95	.16	.72	.49	.34	.58		.54
Ratio of Expanded Banks' Credit Base to Local Revenue	1.49	.33	1.26	.67	1.42	1.15		1.05
G-1 College Related Revenues Received by Local Governments	$ 2,162,000	$ 1,136,000	$ 1,551,000	$ 755,000	$ 898,000	$ 452,000	$ 6,954,000	$ 1,159,000
Ratio of Revenue Received to College Expenditures	.14	.14	.13	.12	.12	.16		.13
Ratio of Revenues Received to Local College Revenue	.22	.28	.23	.17	.51	.31		.29

TABLE 1

SUMMARY OF ECONOMIC IMPACT DATA (Continued)

	College A	College B	College C	College D	College E	College F	Total	Average
G-2 Operating Cost of Local Government Services and Public Schools	$ 1,610,000	$ 419,000	$ 1,526,000	$ 633,000	$ 573,000	$ 343,000	$ 5,104,000	$ 851,000
Ratio of Operating Cost to College Expenditure	.11	.05	.13	.10	.08	.12		.10
Ratio of Operating Cost to Local Revenue	.16	.10	.23	.14	.32	.24		.20
I-1 Number of Jobs Attributable to the Presence of the College	2,775	1,174	2,006	1,198	1,428	628	9,209	1,534
Ratio of Number of Jobs to College Expenditures	.00018	.00014	.00017	.00019	.00019	.00022		.00018
Ratio of Number of Jobs to Local Revenue	.00028	.00029	.0003	.00027	.00081	.00043		.00040
I-2 Personal Income of Local Individuals from College-Related Jobs and Business Activities	$22,720,000	$ 9,574,000	$16,523,000	$10,362,000	$12,988,000	$ 5,320,000	$ 77,487,000	$12,915,000
Ratio of Personal Income to College Expenditures	1.49	1.16	1.39	1.68	1.73	1.86		1.55
Ratio of Personal Income to Local Revenue	2.33	2.38	2.46	2.32	7.34	3.67		3.41

Introduction

The expansion in the number of community colleges durng the late 1960's and early 1970's was caused primarily by the enactment of the Illinois Public Junior College Act of 1965 and the leadership of people in local areas. Since then, the people of local districts have invested their time, energy, and money to have good local community colleges. The state has contributed also, but a large portion of the funds to operate the colleges was supplied through local taxes paid by the people and tuition and fees paid by students. In general they are proud of their college and recognize the value of having higher education available locally. Because of the programs of the college, people receive training in varied areas and are better prepared to meet the needs of industry, public services, and life in an increasing technological society.

In recent years there has been increasing pressure from the public and legislators for the community colleges to be more "accountable" for what they are doing. Pressure has increased for colleges to justify their need for increasing funds even though the increases were caused primarily be escalating inflation. This caused colleges to take a new look at all the advantages they provided and to justify to a greater degree the reasons they were important to the community. Educational, cultural, and aesthetic benefits were generally recognized by the public, but in addiiton there were significant economic advantages provided by the local college. With the development of the community college, jobs were created, people moved to the community to work at the college, and more money was spent at local businesses. Though the economic benefits were not mentioned often, they have had a considerable impact upon the community.

Purpose

There was a need to study the economic impact of community colleges to be able to inform the public about an important value of the community college in their district. This study was an effort to prepare this kind of information. To do this six community colleges were selected with the purpose of estimating and alalyzing the economic impacts on each district during the 1978 fiscal year which extended from July 1, 1977 through June 30, 1978. The research was concerned with the economic impact of the money spent by the colleges. Does the money leave the district? Does the money actually have an effect upon the district? If so, how does it affect the district. These were the kinds of questions the study attempted to answer.

Theory Base

Fundamental to this research is the theory that for each dollar spent for goods, services, and salaries by an institution or business, there will be many who benefit directly or indirectly from the original expenditure. For example if a college buys equipment for a classroom, a salesman receives a commission; the manufacturer benefits; and indirectly the producers of iron, wood, plastics, and other materials used in the equipment realize a profit from the money spent for the finished product.

The benefits of additional money in a district are many and varied. In the case of a community college, the money paid as salaries may be spent locally for rent, mortgage payments, groceries, services, other goods or placed in savings. Although the general thought is that merchants and bankers are the beneficiaries, many others receive benefits also. The money deposited in both savings and checking accounts allows the bank to make more money available to people to finance homes, cars, and other large-cost items. Increased values and new properties increase the tax money and broaden the base for local government services. Figure 1 indicates cash flow within a community.

The community college, in considering the total economic relationship with the surrounding community, also causes some disadvantages. Fire protection, electricity, sewage disposal, and road maintenance are only a few of the services which may be necessary for the local government to provide. Additional people in an area create a need for new housing, but the additional children may create an added burden for the local schools.

Methodology

The model used for this study was developed by economists John Caffrey and Herbert Isaacs in 1971 for the American Council on Education with the expressed purpose to aid colleges and universities to determine the economic impact on their areas. Three major environments--local businesses, local governments, and local individuals of the college district--were examined. Seven sub-models were defined to simplify the system for collecting and analyzing information. (Figure 2)

Six colleges were chosen for the study. They were selected as being representative of the community colleges in Illinois. One is totally within Cook County. Another is a district with one of the largest enrollments in the state and is located in a suburban area of Chicago. The others are spread throughout Illinois with varying industrial and vocational characteristics. Two of the colleges are located in the southern part of the state, one with a very small enrollment, and the other with a sizeable enrollment.

Financial information concerning local businesses, local governments, faculty, staff, and students was researched. Business records of the colleges were used to obtain information about the spending patterns of the colleges. Data concerning the financial action of businesses and governments were obtained from state records and United States Census Bureau information. To identify living and spending patterns of faculty, staff, and students, a representative sample of each group was surveyed.

The instrument used to collect information from faculty, staff, and students was a variation of the questionnaire recommended by the American Council on Education. The format was changed by eliminating some items

and varying content to adapt it to the population of the community college. For example, a question concerning housing included reference to dormitories and to sorority-fraternity housing which were non-existent at the community colleges. Consequently, this item was deleted from the questionnaire. Also, an effort was made to word the questions very carefully to remove any hesitancy to answer questions which might be personal and to encourage a good rate of return of the survey instruments.

Annual Estimated Impacts

The following explanations and results are given on a model-by-model basis. As indicated previously three major areas were studied: (business, government, and individuals), with a total of seven sub-models used to estimate the economic impact. The mathematical equations for each model is contained in Appendix A.

Model B-1 COLLEGE RELATED BUSINESS VOLUME.

This variable includes local expenditures by the college, faculty, staff, and students; purchases locally by local business in support of their college-related business; and local business volume stimulated by college related income by local individuals other than college employees.

College-Related Local Expenditures were computed by examination of college business records and by using information about faculty-staff expenditures obtained from surveys of faculty and staff to determine the proportion of those groups living in the district and the proportion of their income which was spent in the district. Student local expenditures were computed from

survey information from students. Full-time student expenditures included meals, transportation, entertainment, textbooks, class supplies, and miscellaneous expenditures. Part-time student expenditures included only transportation, textbooks, and class supplies.

Purchases Locally by Local Businesses in support of their college-related business refers to business beyond that which was normal and which was caused by college expenditures. This was computed using a multiplier. The range of the multiplier suggested by Caffrey and Isaacs was $.15 to $.30 per dollar expenditures by local residents in local businesses. So that the study reflected a conservative estimate, $.15 was used as the multiplier.

Local Business Volume stimulated by college-related income refers to expenditures by local individuals other than faculty, staff, or students; and which were made possible by original expenditures of the college. For example, if the college buys equipment at the local hardware store, it allows the owner of the hardware store to increase his purchases from other merchants. Business is increased at several merchants because of the original expenditure. The multiplier range suggested for this formula was $.60 to $.80 per dollar of expenditures by local residents in local business establishments. The figure $.60 was used again to provide a minimal estimate.

The following figures represent the estimated college related business volume because of college expenditures.

College A	$ 42,428,000
College B	22,635,000
College C	29,472,000
College D	20,067,000
College E	23,769,000
College F	10,408,000
Total	$148,779,000

Model B-2 VALUE OF LOCAL BUSINESS PROPERTY BECAUSE OF COLLEGE-RELATED BUSINESS.

There are two parts to this sub-model. One is the value of local business real property committed to college-related business, and the second is the value of local business inventory attributable to college-related business.

Value of Business Real Property was estimated by computing the ratio of the college-related business volume to total business volume, which was estimated from sales tax collected by the state from each county. This ratio was applied to the assessed value of local business real property obtained from the Department of Local Government Affairs, State of Illinois. By using the ratio of assessed value to real market value, the assessed value was converted to real or actual values.

Value of Business Inventory committed to college-related business was computed by multiplying the college-related local business volume times a locally used inventory-to-business volume ratio which was provided by Caffrey and Isaacs.

The following figures represent the estimated value of local business property because of college-related business.

College A	$ 48,939,000
College B	29,682,000
College C	42,058,000
College D	20,166,000
College E	25,300,000
College F	9,134,000
Total	$175,297,000

Model B-3 EXPANSION OF THE LOCAL BANKS' CREDIT BASE RESULTING FROM COLLEGE-RELATED DEPOSITS.

Banks are able to make loans because of the money in checking (demand) and savings (time) accounts of people in the community. The Federal Reserve System requires that a minimum amount of deposits be placed in reserves by each bank. Local banks are required to keep on reserve .03 of their time deposits. The requirement on demand deposits varies between .07 and .1175, depending upon the amount of deposits. Banks, in general, do not lend money to the limits established by the Federal Reserve System, keeping more money in reserve than is required. So that estimates were conservative, this study assumed .10 of time deposits and .20 of demand deposits were held in reserve.

The average amount which colleges deposited with the banks was taken from college records while the amounts in deposit by faculty and staff were computed on the basis of average balances of people in the community and the proportion of faculty and staff living in the district. For the computation of deposits attributed to students, only full-time students were considered using an average of $50.00 per student.

The following figures were the estimated expansion of local banks' credit base due to college-related deposits. Because of problems in obtaining similar information from credit unions and savings and loan institutions, these types of lending institutions were omitted making the over-all expansion of credit base very conservative.

College A	$14,488,000
College B	1,324,000
College C	8,451,000
College D	2,986,000
College E	2,505,000
College F	1,664,000
Total	$31,418,000

Model G-1 COLLEGE RELATED REVENUES RECEIVED BY LOCAL GOVERNMENTS.

This variable includes estimates of college-related taxes, sales tax revenue, motor fuel tax and incom tax returned to local governments as a result of college-related local purchases, and state and federal aid to local governments allocable to the presence of the college.

College-Related Real-Estate Taxes are the sum of real-estate taxes paid by faculty and staff and real-estate taxes paid to local governments by local businesses for real property allocable to college-related business.

Sales Tax Revenue Paid to Local Governments was computed by multiplying the proportion of population of a county which was within a college district times the amounts of sales tax returned to each county in the college district. Records of the Illinois Department of Revenue provided sales tax information.

State and Federal Aid to Local Governments is composed of aid to public schools based upon the number of children of faculty and staff; and shared income tax and motor fuel tax funds based upon State of Illinois records.

The estimated revenues received by local governments are as follows:

College A	$2,162,000
College B	1,136,000
College C	1,551,000
College D	755,000
College E	898,000
College F	452,000
Total	$6,954,000

Model G-2 OPERATING COST OF LOCAL GOVERNMENTAL-PROVIDED MUNICIPAL AND PUBLIC SCHOOL SERVICES ALLOCABLE TO COLLEGE-RELATED INFLUENCES

The focus of this study as a whole was upon economic benefits which were a result of the community college. However, as there are additional funds for local governments because of money spent by staff of a college, local governments have increased costs for maintaining public services and providing educational programs created by the increased number of people. This sub-model deals with a negative aspect of impact by considering the costs generated by additional people in the community. It includes operating costs of local government-provided municipal services allocable to college-related influences and operating costs of local public schools allocable to college-related persons.

Operating Cost of Government-Provided Municipal Services was computed by multiplying the proportion of college-related people of a county within the college district times the cost of governmental services as revealed by publications of the Illinois Department of Local Government Affairs.

Operating Cost of Local Public Schools was determined by calculating the average cost of educating a student in the district from records of the Illinois School Board and multiplying this amount times the number of children of faculty and staff of the college.

The operating cost of these services by local governments and school districts was estimated to be the following.

College A	$1,610,000
College B	419,000
College C	1,526,000
College D	633,000
College E	573,000
College F	343,000
Total	$5,104,000

Model I-1 NUMBER OF LOCAL JOBS ATTRIBUTABLE TO THE PRESENCE OF THE COLLEGE.

This variable included two parts. The first variable was the number of faculty and staff positions with the college. The second was the number of full-time jobs attributable to the total local expenditures which can be associated with the college.

Number of Faculty and Staff Positions was computed by summing the full-time employees and the full-time equivalence of part-time employees of the college. The sum was used as the number of employees at the college.

Number of Jobs Attributable to the College-Related Local Expenditures was computed by totaling the college-related local expenditures and operating costs of local governments and multiplying this total expenditure by .00007, a coefficient representing the number of jobs per dollar expenditure. Caffrey and Isaacs suggested a range from .00007 to .00009; and as in similar situations in this study, the conservative figure was used.

The following is the estimated number of local jobs attributable to the presence of the college.

College A	2,775
College B	1,174
College C	2,006
College D	1,198
College E	1,428
College F	628
Total	9,209

Model I-2 PERSONAL INCOME OF LOCAL INDIVIDUALS FROM COLLEGE-RELATED JOBS AND BUSINESS ACTIVITIES.

Two types of personal income were considered. The first was the income of faculty and staff who live in the district and the second resulted from the jobs attributable to college-related expenditures.

Personal Income of Local Faculty and Staff was computed by multiplying the gross compensation of all faculty and staff by the proportion of those employees living in the district.

Personal Income of Persons Other than Faculty and Staff attributable to college-related expenditure was computed by multiplying the college-related expenditure by the local figure for payrolls and profits per dollar of local expenditures. The coefficient for this local figure was taken from Caffrey and Isaacs, who suggested a range from $.50 to $.60. The coeficient used was $.50 to be consistent with the use of other multipliers in this study.

The following was the estimated income of local individuals from college-related jobs and business activities.

College A	$22,720,000
College B	9,574,000
College C	16,523,000
College D	10,362,000
College E	12,988,000
College F	5,320,000
Total	$77,487,000

Results

Model B-1, the College-Related Local Business Volume, estimated the six colleges to have an economic impact of $148,779,000 upon their districts. The total expenditures for the 1977-1978 fiscal year was $51,781,000. This shows the business volume generated to be three times the colleges' expenditures. This impact becomes even more significant when compared to the direct dollar investment by the people in the district. During the fiscal year 1977-1978, $27,715,000 was paid in the form of taxes, student fees, and tuition. Therefore, the impact of the college-related local business volume of $148,779,000 was 5.37 times the local investment in the college. In other words, for every one dollar expended by the people in the district directly in support of the college districts, $5.37 was generated in business volume.

The above illustrates one of the more obvious positive economic impacts; and the study reveals the same was true for the Value of Local Business Property Committed to College-Related Business, the Expansion of Local Banks' Credit Base, Number of Local Jobs, and Personal Income of Local Individuals. However, positive economic affects on local governments were not as significant when considered in light of the costs of local government. This was because the persons working in college-related positions create liabilities by requiring governmental services as well as paying taxes to support these services. Normally one would expect the positive economic impact and costs of government to be approximately equal. Here, the positive impact is slightly larger. Other studies have shown the difference between the economic benefit for local government and the operating costs, in large part, was because of faculty living out-of-district and not requiring governmental services.

BUSINESS VOLUME VS. REVENUE/EXPENDITURE

	College A	College B	College C	College D	College E	College F
College Related Business Volume	$42,428,000	$22,635,000	$29,472,000	$20,067,000	$23,769,000	$10,408,000
Total Expenditure	$15,225,000	$8,246,000	$11,820,000	$6,154,000	$7,472,000	$2,864,000
Total Revenue	$16,132,000	$7,480,000	$11,005,000	$6,765,000	$6,985,000	$2,895,000
Local Revenue from Taxes, Tuition and Student Fees	$9,843,000	$4,023,000	$6,705,000	$4,462,000	$1,770,000	$1,451,000
Total Revenue from State, Federal and Other Sources	$6,289,000	$3,458,000	$4,300,000	$2,303,000	$5,215,000	$1,444,000
Ratio of Business Volume to Expenditures	2.79	2.74	2.49	3.26	3.18	3.62
Ratio of Business Volume to Local Revenue	4.35	5.63	4.40	4.50	13.43	7.17
Ratio of Local Revenue to Total Revenue	.61	.53	.61	.66	.25	.54

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At the same time, they were spending part of their income within the district creating economic benefits.

The estimated economic impact of the six community colleges is concluded to be large. The money spent by the colleges and their several hundred employees provides economic benefits as well as educational, aesthetic and service benefits. The accumulative benefits are even greater.

Summary

The economic impacts of a college on its district are varied and complex, and the interpretation of the impacts as revealed by this study should receive careful consideration. The estimates based on this study are conservative. The model, developed for the expressed purpose of measuring economic impact of colleges and universities, has been tested and validated by use in earlier research. In this study the researcher also used the most cautious figures in calculating the impacts.

Dollar amounts should be used as defined by the models. It would be erroneous and misleading to combine any of the figures or try to arrive at a total dollar figure. Each model represents a different kind of impact. Therefore, any representation should keep the models separated and should be interpreted within the limits of each model's definition.

The expenditures of the colleges in this study represent 18 percent of the operating expenditures for all of the districts in the state. If the assumption was made that the six colleges in this study were a representative sample and the same proportion of expenditures to impact was applied to the expenditures of the entire state, the estimated impact of business volume would be $850 million. Actually, this would be a low estimate and in all probability the impact would surpass $1 billion.

This is based upon the assumption that a higher percent of expenditures of the colleges would be made within the state than made within a single district. The percent of expenditures made within an area is a significant factor in determining the impact of business volume.

A state-wide study would be difficult to coordinate and conclude. But as the techniques are simplified and information becomes more readily available, such a study becomes more practical.

Model B-1

BV_{CR}

College-Related Local Business Volume

$$BV_{CR} = (E_L)_{CR} + (P_{LB})_{CR} + (BV_I)_{CR}$$

$(E_L)_{CR}$ = college-related local expenditures

$(P_{LB})_{CR}$ = purchases from local sources by local businesses in support of their college-related business volume

$(BV_I)_{CR}$ = local business volume stimulated by the expenditure of college-related income by local individuals other than faculty, staff, or students

Model B-2

$(PR_B)_{CR}$

Value of Local Business Property Committed to College-Related Business

$$(PR_B)_{CR} = (RP_B)_{CR} + (I_B)_{CR}$$

$(RP_B)_{CR}$ = value of local business real property committed to college-related business

$(I_B)_{CR}$ = value of local business inventory committed to college-related business

Model B-3

CB

Expansion of the Local Banks' Credit Base Resulting from College-Related Deposits

$$CB = (1-t)\,[TD_c + (TD_f)\,(F) + (TD_s)\,(S)] + (1-d)\,[DD_c + (DD_f)\,(F) + (DD_s)\,(S) + (cbv)\,(BV_{CR})]$$

t = local time-deposit reserve requirement

TD_c = average time deposit of the college in local banks

TD_f = average time deposit of each faculty and staff person in local banks

F = total number of faculty and staff

TD_s = average time deposit of each student in local banks

Model B-3 (cont.)

S = total number of students

d = local demand-deposit reserve requirement

DD_C = average demand deposit of the college in local banks

DD_f = average demand deposit of each faculty and staff person in local banks

DD_s = average demand deposit of each student in local banks

cbv = cash-to-business-volume ratio

BV_{CR} = college-related local business volume (model B-1)

Model G-1

R_{CR}

College-Related Revenures Received by Local Governments

$$R_{CR} = (R_{RE})_{CR} + (R_{ST})_{CR} + (R_A)_{CR}$$

$(R_{RE})_{CR}$ = college-related real-estate taxes paid to local governments (model G-1.1)

$(R_{ST})_{CR}$ = sales tax revenue received by local governments as a result of college-related local purchases (model G-1.3)

$(R_A)_{CR}$ = state aid to local governments allocable to the presence of the college (model G-1.4)

Model G-2

$(OC_{M,PS})_{CR}$

Operating Cost of Local Government-Provided Municipal and Public School Services Allocable to College-Related Influences

$$(OC_{M,PS})_{CR} = (OC_M)_{CR} + (OC_{PS})_{CR}$$

$(OC_M)_{CR}$ = operating cost of local government-provided municipal services allocable to college-related influences (model G-2.1)

$(OC_{PS})_{CR}$ = operating cost of local public schools allocable to college-related persons (model G-2.2)

Model I-1

J_L

Number of Local Jobs Attributable to the Presence of the College

$J_L = F + (j)\,[(E_L)_{CR} + (OC_{M,PS})_{CR}]$

F = total number of faculty and staff

j = full-time jobs per dollar of direct expenditures in the local environment

$(E_L)_{CR}$ = college-related local expenditures (model B-1.1)

$(OC_{M,PS})_{CR}$ = operating cost of government-provided municipal and public school services allocable to college-related influences (model G-2)

Model I-2

PI_{CR}

Personal Income of Local Individuals from College-Related Jobs and Business Activities

$PI_{CR} = (f_L)\,(W_F) + (p)\,(E_L)_{CR}$

f_L = proportion of faculty and staff residing locally (see model B-1.1.2.1)

W_F = gross compensation to faculty and staff

p = payrolls and profits per dollar of local direct expenditures

$(E_L)_{CR}$ = college-related local expenditures (model B-1.1)

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